

REPLACEMENT CLAIMS:

International Application No.: PCT/US03/06969

1. A method of preparing a coating composition, comprising the steps of:
combining an amine and an epoxy material in the presence of a reactive diluent comprising at least one methacrylate compound to provide a composition comprising an advanced molecular weight epoxy-amine material and a reactive diluent;
making an aqueous dispersion of the composition; and
polymerizing the reactive diluent to provide the coating composition.
2. The method of claim 1, wherein the step of making the aqueous dispersion comprises combining the composition with an acid.
3. The method of claim 1, wherein the epoxy material is derived from Bisphenol A and epichlorohydrin.
4. The method of claim 1, wherein the epoxy material is dissolved or dispersed in the reactive diluent.
5. The method of claim 1, wherein the epoxy-amine material has residual epoxy functionality.
6. The method of claim 5, further comprising the step of:
reacting the epoxy-amine material having residual epoxy functionality with an active hydrogen compound or precursor.
7. The method of claim 6, wherein the step of reacting is carried out before the step of making the aqueous dispersion.
8. A method of preparing a coating composition, comprising the steps of:
making an aqueous dispersion of a composition comprising an advanced molecular weight epoxy-amine material having residual epoxy functionality and a reactive diluent;
polymerizing the reactive diluent to provide the coating composition; and
reacting the epoxy-amine material having residual epoxy functionality with an active hydrogen compound or precursor;

wherein the step of reacting is carried out after the step of making the aqueous dispersion.

9. A method of preparing a coating composition, comprising the steps of:
making an aqueous dispersion of a composition comprising an advanced molecular weight epoxy-amine material having residual epoxy functionality and a reactive diluent;
polymerizing the reactive diluent to provide the coating composition; and
reacting the epoxy-amine material having residual epoxy functionality with an active hydrogen compound or precursor;

wherein the step of reacting is carried out after the step of polymerizing the reactive diluent.

10. The method of claim 1, wherein the coating composition further comprises a crosslinker.

11. The method of claim 1, wherein the aqueous dispersion further comprises a surfactant.

12. The method of claim 2, wherein the composition is combined with a surfactant before combining the composition with the acid.

13. The method of claim 2, wherein the acid is an aqueous acid.

14. The method of claim 1, wherein the step of making the aqueous dispersion comprises:
combining the composition with an acid to provide an acidified composition; and
combining the acidified composition with an aqueous liquid.

15. The method of claim 14, wherein the aqueous liquid further comprises a surfactant.

16. The method of claim 1, wherein the reactive diluent comprises a multifunctional material.

17. A method of preparing a coating composition, comprising the steps of:
making an aqueous dispersion of a composition comprising an advanced molecular

weight epoxy-amine material and a reactive diluent;

adding an additional reactive diluent before polymerizing; and

polymerizing the reactive diluent to provide the coating composition.

18. The method of claim 1, wherein the reactive diluent is polymerized by free radical polymerization.

19. The method of claim 1, wherein the coating composition further comprises a solvent.

20. The method of claim 1, wherein the coating composition is a packaging coating composition, an anticorrosive coating composition, a stain blocker coating composition, a paper coating composition, a cement board coating composition, a fiberboard coating composition, and combinations thereof.

21. The method of claim 1, wherein the coating composition is substantially free of solvent.

22. The method of claim 1, wherein the coating composition has a volatile organic compound content of at most 0.2 kilograms per liter of solids.

23. The method of claim 2, wherein the coating composition has a volatile organic compound content, excluding acid, of at most 0.2 kilograms per liter of solids.

24. A coating composition prepared according to the method of claim 1.

25. A method of coating an article comprising the steps of:
applying a coating composition prepared according to the method of claim 1 to an article; and
hardening the coating composition to provide a coated article.

26. The method of claim 25, wherein the coating composition further comprises a crosslinker.

27. The method of claim 25, further comprising the step of heating the coated article to

provide a crosslinked coating.

28. The method of claim 25, wherein the step of applying comprises applying the coating composition by an electro coat process.

29. The method of claim 1 wherein the at least one methacrylate compound comprises butyl methacrylate.

30. The method of claim 29 wherein the reactive diluent further comprises at least one vinyl compound.

31. The method of claim 30 wherein the at least one vinyl compound comprises styrene.

32. The method of claim 31 wherein at least 7.5% by weight and at most 80% by weight reactive diluent is used, based on the total combined weight of epoxy material, amine, and reactive diluent.

33. The method of claim 32 wherein at least 15% by weight and at most 50% by weight reactive diluent is used, based on the total combined weight of epoxy material, amine, and reactive diluent.